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THE

ONTARIO WATER RESOURCES

COMMISSION

WATER POLLUTION SURVEY

of the

VILLAGE OF CASSELMAN

COUNTY OF RUSSELL

1966

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ONTARIO WATER RESOURCES

COMMISSION

Report on a

WATER POLLUTION SURVEY

of the

VILLAGE OF CASSELMAN

in the

COUNTY OF RUSSELL

Division of Sanitary Engineering

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REPORT ON A WATER POLLUTION SURVEY

OF THE

VILLAGE OF CASSELMAN

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REPORT ON A WATER POLLUTION SURVEY

of the

VILLAGE OF CASSELMAN

INTRODUCTION

A water pollution survey of the Village of Casselman was performed on June 1, 1966. A similar survey was performed in February, 1962. Surveys of this type are made by the Ontario Water Resources Commission in order to locate potential and existing sources of water pollution. Recommendations are made concerning the abatement of conditions which adversely affect water quality. Appended to this report is a map of Casselman showing the locations of sampling points within the village.

INTERVIEW WITH OFFICIALS

A discussion was held with Mr. P. E. Levesque, Clerk-treasurer. It was learned that council had not re-engaged the firm of J. L. Richards & Associates to update their report of 1959 as related to Mr. R. G. Barrens of the OWRC in March 1965. Dr. R.G. Grenon, Medical Officer of Health, was not available for discussion.

THE VILLAGE OF CASSELMAN

The Village of Casselman was named for Martin Casselman who first sighted a high falls on the South Nation River in 1844 and established a saw mill at High Falls. The village is located within the Township of Cambridge 39 miles from the mouth of the river. According to the 1966 Municipal Directory the population

is 1,291. The area of the village is estimated to be 996 acres.

WATER SUPPLY

Water for domestic purposes is obtained entirely from individual private wells of approximately 60 foot depth. Water for the Casselman Creamery is reportedly obtained from two private wells, Benoit's dairy employs ground water as well. River water is employed for the municipal fire supply system.

SURFACE WATER DRAINAGE

It is estimated that 75 to 80 per cent of the built-up area of the village is served by a storm sewer system which discharges to the river, at two points at Ste. Euphemie Street and opposite St. Joseph Street. The South Nation River is subject to extreme flood stages in the spring, while flows usually fall to very low values in August, September and October.

SANITARY WASTE DISPOSAL

Reportedly, all premises in the villages, where storm sewers are available, direct sanitary wastes, usually after passing through a septic tank to the storm drainage system and thence the river.

INDUSTRIAL WASTE DISPOSAL

Both milk processing plants discharge their process wastes without the benefit of any treatment to the storm sewers and thence to the river.

MUNICIPAL REFUSE DISPOSAL

The village garbage dump is located (near the Lemieux Road) one and one-half miles from Casselman in Cambridge township in a gully which obviously drains to the river during periods of runoff. Some attempt is made at burning the garbage.

SAMPLING PROCEDURE

Samples were collected from the South Nation River above and below the two storm sewer outfalls as well as from the outfalls.

SAMPLE RESULTS

The pertinent laboratory analyses results of both this survey and a water quality monitoring program initiated in 1964 together with an interpretation of the various analyses employed are appended to this report.

The analyses employed in this survey to assess the quality of surface waters and outfall discharges were biochemical oxygen demand (BOD), suspended solids, and Most Probable Number of Total Coliforms and E. Coli organisms. The bacteriological examinations, of samples from this survey were performed at the Ottawa and Regional Laboratory of the Ontario Department of Health while the chemical analyses were performed at the OWRC Laboratory in Toronto.

All sample analyses pertaining to the monitoring program were performed at the OWRC Laboratory.

The OWRC objectives for surface water quality are that the following concentrations are not exceeded:

BOD	-	4.0 ppm
Coliform Count	-	2400 coliforms per 100 ml.

Adequate protection of surface waters, except in certain specific instances influenced by local conditions, is generally obtained if the following waste discharge concentrations are not exceeded:

BOD	-	15 ppm
Suspended Solids	-	15 ppm

The sample analyses results of both this survey and the stream monitoring program corroborate the usual observations that a substantial volume of inadequately treated sanitary and industrial wastes discharge to the South Nation River at Casselman.

A provincially financed sewage works project is one answer to the urgent problem in Casselman.

SUMMARY

A water pollution survey of the Village of Casselman in June, 1966 confirmed the fact that no action had been taken on the previous OWRC report and recommendation of February, 1962. It is obvious from the findings of both reports that action without further delay is imperative.

RECOMMENDATION

The Village of Casselman should proceed without further delay in providing satisfactory sewage treatment facilities.

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INTERPRETATION OF ANALYSES

The analyses employed to determine the quality of the water samples were biochemical oxygen demand (BOD), solids and detergents, Bacteriological examinations were performed to determine the presence of coliform organisms.

The BOD of sewage or polluted waters is the oxygen required during stabilization of the decomposible organic or chemical matter by aerobic biochemical action. A five-day BOD determination with incubation at 20 degrees centigrade is reported. A high BOD is indicative of organic or chemical pollution.

The analyses for solids include tests for total, suspended, and dissolved solids. The results are reported in ppm. The first test measures both the solids in solution and in suspension. The suspended solids indicate the measure of undissolved solids of organic or inorganic nature in suspension. Significant sources of suspended solids are sewage, industrial wastes and land erosion. The dissolved solids are a measure of those solids in solution.

The Most Probable Number (MPN) method provides an index of the number of coliform organisms per 100 cubic centimetre of the water sample. The Multiple Tube Fermentation technique was employed. Although the presence of coliforms indicates pollution from human or animal excrement, or from some non-faecal sources, E. Coli organisms originate in the intestinal tract of humans and other warm blooded animals.

TABLE I

POLLUTION SURVEY ANALYSES RESULTS

Sample Point No.	Description	5-Day BOD	SOLIDS			BACTERIOLOGICAL EXAMINATION Most Probable Number	
			Total	Susp.	Diss.	Total Coliforms	E. Coli
SN 39.2	South Nation River - upstream of Casselman	2.6	366	28	338	2,100	230
SN 39.1	South Nation River - downstream of Casselman	480	606	172	434	11,000+	11,000+
SN 39.2W	St. Joseph Street sewer outfall	124	1018	132	886	11,000+	11,000+
SN 39.1W	St. Euphemie Street sewer outfall	25,000	11524	378	10146	11,000+	11,000+

Date Sampled: June 1, 1966

NOTE: All analyses except pH reported in ppm unless otherwise indicated.

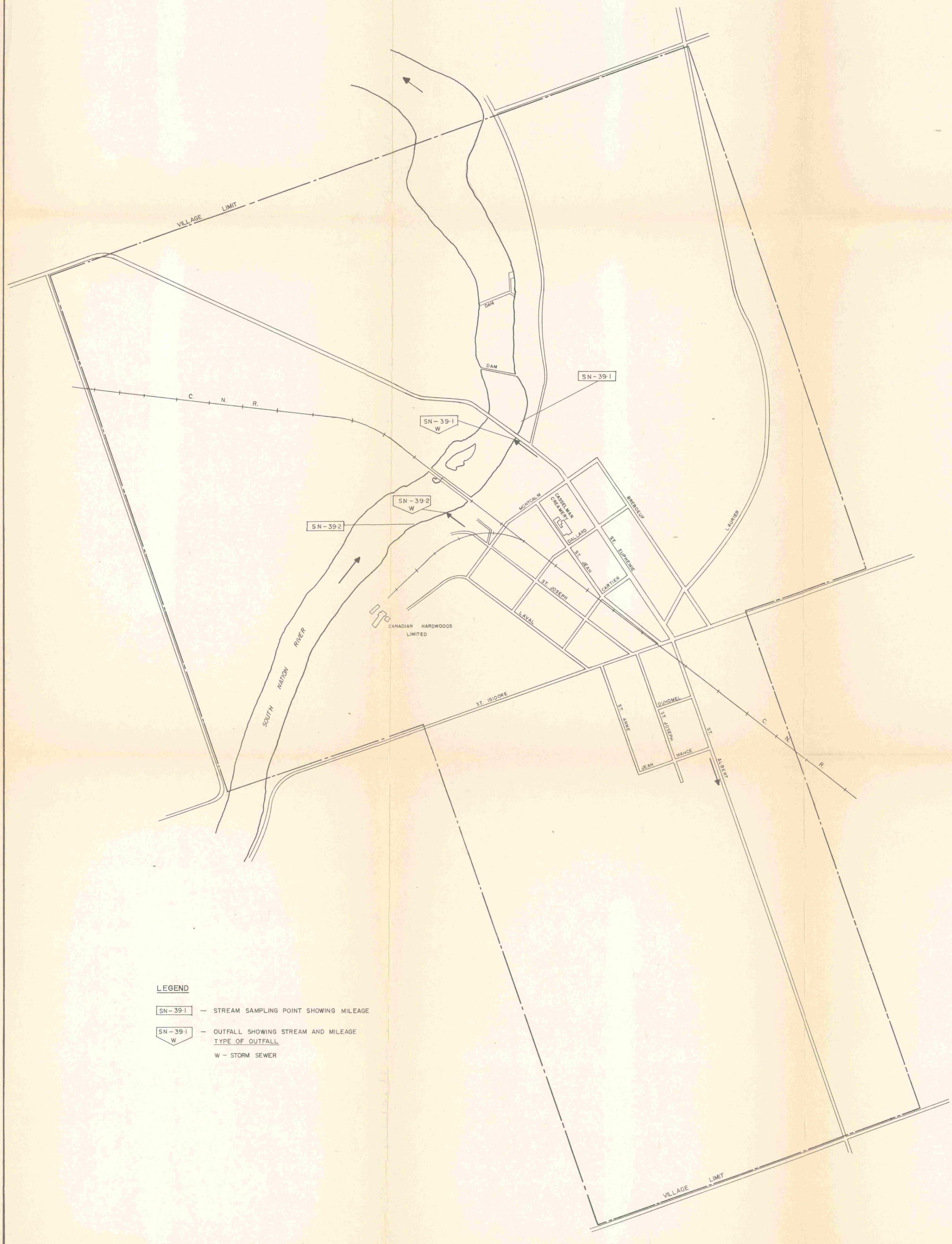
TABLE II

SOUTH NATION RIVER MONITORING RESULTS

Sampling Point Location: South Nation River downstream of Casselman

Sample Point No.	Date	5-Day BOD	SOLIDS Total	SOLIDS Susp.	BACTERIOLOGICAL EXAMINATION Coliforms per 100 ml./MF
SN 39.1	November 30, 1964	2.7	---	8	9,900
	July 8, 1965	8.0	406	18	---
	October 21, 1965	1.8	---	---	14,000
	December 20, 1965	7.0	206	---	10,100
	February 11, 1966	5.2	234	10	---
	March 22, 1966	12	200	74	26,000
	April 15, 1966	21	368	15	90,000,000
	May 3, 1966	12	352	15	60,000
	June 14, 1966	116	450	51	100,000,000
	July 5, 1966	--	374	15	1,680,000
	August 16, 1966	76	442	47	74,000,000
	September 12, 1966	136	504	73	16,000,000

NOTE: All analyses except pH reported in ppm unless otherwise indicated



LEGEND

SN-39-1 — STREAM SAMPLING POINT SHOWING MILEAGE

SN-39-1 W — OUTFALL SHOWING STREAM AND MILEAGE
TYPE OF OUTFALL
W — STORM SEWER

ONTARIO WATER RESOURCES COMMISSION

VILLAGE OF CASSELMAN

WATER POLLUTION SURVEY

1966

SCALE: 1" = 500'	
DRAWN BY: A.L.	DATE: NOV. 1966
CHECKED BY:	DRAWING No. 66-76